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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,436	09/22/2003	Mi-Sook Nam	8733.897.00-US	6500

7590 04/05/2005  
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EXAMINER

CALEY, MICHAEL H

ART UNIT PAPER NUMBER

2871

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/665,436	<b>Applicant(s)</b> NAM ET AL.	
	<b>Examiner</b> Michael H. Caley	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09222003</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-3 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (U.S. Patent Application Publication 2002/0003596).**

Regarding claims 1 and 8, Kim discloses a color filter substrate for a transfective liquid crystal display device having:

- a substrate (Figures 8, 9F, and 10 element 110) having a plurality of pixel regions having reflective and transmissive portions (Page 5 Paragraphs 0072-0073);

- a black matrix on the substrate (Figures 9A, 9F element 172);

- a buffer layer (Figures 8, 9C, 9F, and 10 element 190) on the black matrix, the buffer layer having a groove (open portion between black matrix portions) corresponding to the black matrix;

- a color filter layer (Figures 8, 9F, and 10 element 130) on the buffer layer, the color filter layer having a first thickness in the reflective portion and a second thickness in the transmissive portion (Page 5 Paragraph 0075); and

- a common electrode on the color filter layer (Figures 8, 9F, and 10 element 116).

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Regarding claims 2 and 9, Kim discloses the first thickness as substantially half of the second thickness, and the color filter layer as having a step difference at a border between the reflective and transmissive portions (Pages 5 and 6 Paragraphs 0075, 0076, 0079).

Regarding claims 3 and 10, Kim discloses the buffer layer as including one of a transparent organic insulating material group including BCB and acrylic resin (Page 4 Paragraph 0038).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 4, 5, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Nonaka et al. (U.S. Patent Application Publication 2003/0179327 “Nonaka”).**

Kim is silent on the thickness of the buffer layer. Nonaka, however, teaches a buffer layer (Figure 1 element 3) of an analogously constructed color filter substrate for a transfective liquid crystal display (Page 1 Paragraph 0002) having a thickness of 5 microns or less (Page 2 Paragraph 0023, Page 9 Paragraph 100; Figure 1 element 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the buffer layer to have a thickness between 2.5 and 4 microns as

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proposed. One would have been motivated to construct the buffer layer disclosed by Kim according to the method taught by Nonaka in order to create the difference in thickness of the color filter regions as specified by Kim (Pages 5 and 6 Paragraphs 0075 and 0076). For example, a buffer layer having a thickness of 2.5 to 4 microns would have been effective to create the ratio of thickness between transmissive and reflective regions of the color filter of 1.1-2.5 disclosed by Kim given the thickness of a conventional color filter. Also, the color filter would have a step difference of 2.5 microns given a buffer layer thickness of 2.5 microns according to the construction disclosed by Kim.

**Claims 15, 16, 17, 20, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim.**

Regarding claims 15, 16, 20, and 21, Kim further discloses:

- a first substrate spaced apart from and facing a second substrate (Figures 8 and 10 element 120);
- a reflective layer in the reflective portion (Figures 8 and 10 element 122);
- a transparent electrode in the transmissive portion (Page 4 Paragraph 0049).

Kim fails to explicitly disclose a gate line, data line, and thin film transistor along with the proposed connections. Kim, however, teaches such an arrangement as proposed in the background of the invention as part of a conventional switching mechanism for a transfective liquid crystal display (Figure 1; Pages 1-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the gate line, data line, and thin film transistor as proposed in the display device disclosed by Kim. One would have been motivated to provide such an addressing and switching mechanism to benefit from the fast response time of the TFT as well as other advantages conventional in the art.

Regarding claims 17 and 22, Kim discloses the thickness of the reflective portion as substantially half the thickness of the transmissive portion (Page 5 Paragraph 0074).

**Claims 6, 7, 13, 14, 18, 19, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Rho (U.S. Patent Application Publication No. 2003/0160918).**

Regarding claims 6, 13, 18, and 23, Kim fails to explicitly disclose the black matrix as having a plurality of first open portions corresponding to the plurality of pixel regions. Rho, however, provides a plan view of a conventional black matrix in an analogously constructed transfective device showing openings for the pixel regions (Figure 9 element 370).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided open portions of the black matrix corresponding to the pixel regions. Such openings are necessary for the correct operation of the device to allow light to pass through the pixel portions of the display due to the light blocking characteristic of the black matrix. One would have been motivated to provide such open portions to enable correct operation of the display.

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Regarding claims 7, 14, 19, and 24 Kim discloses the buffer layer as having a plurality of second open portions corresponding to the transmissive portion (Figure 8; Page 5 Paragraph 0074).


***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley  
March 22, 2005

  
mhc

  
TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER